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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/770,435

02/03/2004

Xudong Shi

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EXAMINER

LUU, AN T

ART UNIT

PAPER NUMBER

2816

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/29/2006

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/770,435

Applicant(s)

SHI ET AL.

Examiner

An T. Luu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7, 11, 24, 25 and 38-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7, 11, 24 and 25 is/are allowed.
- 6) ☒ Claim(s) 38-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Applicant's Amendment filed on 11-28-06 has been received and entered in the case. The rejections set forth in the previous Office Action are maintained as indicated below.

#### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 42-43 and 46-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no description for the limitations "a phase mixer" and "a clock buffer" as recited in these claims. Further, drawings do not show these limitations.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 39-43 and 45-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 39, the limitation "*the charge-pump includes a semiconductor device to provide* (emphasis added) *the first bias current in response to the load current*" appears to be

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misdescriptive since "*the first bias current*" is recited previously in claim 38 as an output of "*the voltage regulator*".

As to claims 40-43, the limitations "a second", "a third", "a fourth bias" and "a fifth" current(s) recited in these claims also appear to be misdescriptive since drawings disclose a single bias current Id outputted from "the voltage regulator". Further, the limitation "phase mixer" of claim 42 appears referring to "voltage controlled oscillator" as recited in claim 38 since there is no component in drawing would be best fitted to be considered "phase mixer". Lastly, the limitation "clock buffer" of claim 43 appears referring to one of components recited earlier since there is no other component in figures meet the limitation "clock buffer".

As to claims 45-47, they have the same problems as that of claims 39, 42 and 43.

Therefore, they are rejected for the same reasons set forth above.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 38 and 40-47 are rejected under 35 U.S.C. 102(e) as being anticipated by the Dietl et al reference (US Patent 6,556,088).

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Dietl et al discloses in figure 9 an apparatus comprising a phase-frequency detector 90; a charge pump 91; a voltage regulator 95 to output a regulated voltage VBP and a load current VBN (voltage and current are co-existed on the same wiring wherein voltage represents different potentials and current represents charge intensity); and VCO 96 to input the regulated voltage and the load current, the VCO to output a signal V having a frequency based on the regulated voltage (i.e., basic operation of VCO), wherein the voltage regulator provides a first bias current (i.e., current on trace from bias generator 95 to charge pump 91) as required by claim 38.

As to claim 40, as best understood, figure 9 discloses a loop resistor 94 wherein the voltage regulator provides the bias current to the loop resistor based on the load current by way of charge pump 91.

As to claim 41, as best understood, figure 9 discloses another charge pump 92 wherein the voltage regulator provides the bias current to the another charge pump based on the load current.

As to claim 42, as best understood, figure 9 discloses a phase mixer 93 wherein the voltage regulator provides the bias current to the phase mixer based on the load current by way of charge pump 91.

As to claim 43, as best understood, figure 9 discloses a clock buffer 97 wherein the voltage regulator provides the bias current to the clock buffer based on the load current by way of charge pump 91.

As to claims 44-47, the scopes of these claims are similar to that of claims 38-39 and 42-43. Therefore, they are rejected for the same reasons set forth above. It is noted that pre-amble is

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not given patentable weight. Besides, a delay locked loop circuit (DLL) and phase locked loop circuit (PLL) are seen as equivalent circuits in the art.

7. Claims 38 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by the Maneatis reference (US Patent 5,727,037).

Maneatis discloses in figure 1 an apparatus comprising a phase-frequency detector 100; a charge pump 104; a voltage generator 110 to output a regulated voltage 132 and a load current 134 (voltage and current are co-existed on the same wiring wherein voltage represents different potentials and current represents charge intensity); and VCO 112 to input the regulated voltage and the load current, the VCO to output a signal 142 having a frequency based on the regulated voltage (i.e., basic operation of VCO), wherein the voltage regulator provides a first bias current (i.e., current on trace from bias generator 110 to charge pump 104) as required by claim 38.

As to claim 39, as best understood, figure 2 discloses detail of a charge pump 104 including a semiconductor device (i.e., transistor) in response to the load current.

### ***Response to Arguments***

8. Applicant's arguments filed 11-28-06 have been fully considered but they are not persuasive.

Regarding the rejection of claims under 35 USC 112, first paragraph, Applicant identifies phase mixer and clock buffer as circuit component of the PLL/DLL[102,103,112,113] of fig. 1a-b and its description is on page 3 of the specification. Examiner respectfully disagrees since component 102, 103, 112 and 113 has a single current input then it cannot be a clock buffer, let

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alone a phase mixer. There is no description of phase mixer or clock buffer on page 3 of the specification. Terms “phase mixer” and “clock buffer” are mentioned on page 3 without descriptions pertaining to their structural and/or operational aspects with the inventive apparatus. It is noted that claims are rejected for failing to provide written description, not lack of support.

Regarding the rejection of claims under 35 USC 112, second paragraph, Applicant is reminded that lines 27+ of page 11 disclose bias current  $I_{bias}$  is derived from current  $I_{id}$ . And independent claims clearly recite “the voltage regulator provides a first bias current to the charge pump based on the load current”. Further, charge pump and voltage regulator are two distinct entities. Therefore, it is incorrect to recite “charge pump...to output the first bias current”.

Regarding the rejection of claims under 35 USC 102 by the Dietl et al reference, applicant has argued that Office Action did not identify “a first bias current”, Examiner respectfully disagrees since Office Action states “a first bias current” limitation on lines 6-7 of page 4. It is noted that “load current” and “a first bias current” can be the same since the recitation of claim does not make a distinction between the above two currents. Further, figure 2 of the instant application shows the same current providing to VCO and charge pump on different traces. Lastly, load current and bias current are considered the same since one is mirrored from the other as shown in figure 6.

As to claim 44, preamble is not given patentable weight. There is no difference in scopes of claims 38 and 44.

As to claims 45-47, they are rejected as best understood in view of 35 USC 112 issues. Further, “a first bias current” to “a third bias current” appear to be the same current as shown in figure 1 a-b. Claims 45-47 are seen as “intended use” since they merely receive an input from the

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claimed apparatus of independent claim for their own operation. The very existing, or lacking, of component(s) recited in claim 45-47 will not change functional/operational characteristics of the claimed invention in dependent claims.

Regarding the rejection of claims under 35 USC 102 by the Maneatis reference, applicant has argued that Office Action did not identify the limitation "wherein the voltage regulator provides a first bias current to the charge-pump based on the load current", Examiner respectfully disagrees since "a first bias current" and "load current" are seen as the same since there is no clear distinction as recited in claim and drawings do not show them distinctly different.

***Allowable Subject Matter***

9. Claims 7, 11 and 24-25 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose an apparatus comprising element being configured as recited in claims. Specifically, none of the prior art teaches or fairly suggests a specific structure of the voltage regulator (See previous Office Action) as recited in claims 7, 11 and 24.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after



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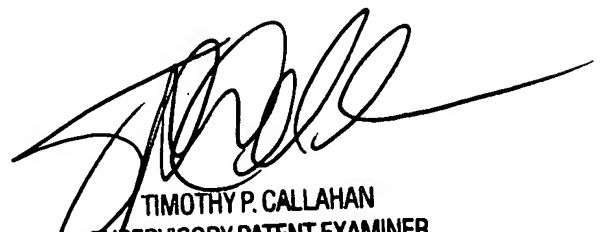
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to An T. Luu whose telephone number is 571-272-1746. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

An T. Luu  
12-13-06



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